



Estimation of debris-flow prone basins based on geomorphic quantities and rainfall amount on granite slopes in Japan

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In Japan, debris flows generally occur by fluidization of colluviums of soil slips after heavy rainfall on steep slopes. For the reduction of debris-flow disasters, the relationship among geomorphic quantities of the mountainous small drainage basin, the arrival of the debris flow to the basin outlet, and rainfall characteristics was examined by using the distribution maps of slope movements and digital elevation models (DEM) on five granite slopes. The results showed that there were geomorphic thresholds determining the lower limit of the arrival of the debris flow to the basin outlet based on the drainage area and the relief ratio. The geomorphic thresholds become smaller with an increase in rainfall amount, which increases the debris-flow risk in many basins.